IN THE CLAIMS

1. (Currently Amended) A method of finding a path from a start point to a target point, in multi-dimensional space, comprising:

(a) determining a plurality of points in a physical space, including a start point and an target point,

(b) computing, using a programmed general purpose computer and a cost function, for said points an accumulated path cost from the start point to a point; representing a minimal cost path from the start point to the point with respect to an optimization criterion;

(c) computing, using said computer, for at least some of said points an estimated-cost-to-target from a point to the target point,

wherein selection of the points for said estimated-cost-to-target computation is according to a pre-established criterion; and

(d) after computing said costs, determining, using said computer, at least one of a minimal path or a minimal path cost of a path from the start point to the target point in the physical space, wherein the determination is based on said accumulated path costs, and is substantially minimal with respect to the optimization criteria, and wherein said path is not constrained by predefined path segments.

2. (Previously Presented) A method according to claim 1, wherein determining a plurality of points comprises generating a discrete model of said physical space.

3. (Previously Presented) A method according to claim 1, wherein the accumulated path cost at the target point approximates a minimal accumulated path cost of a path from the start point to the target point in the physical space.

4. (Previously Presented) A method according to claim 1, wherein the minimal path determined is made of line segments and each line segment connects two of said points.

5. (Original) A method according to claim 4, wherein the minimal path cost has a lower or equal cost than any zigzag path from the start point to the target point, wherein the zigzag path connects a plurality of said points, only by straight line segments.

6. (Original) A method according to claim 1, wherein the minimal path determined is a continuous smooth line.

7. (Previously Presented) A method according to claim 1, comprising repeatedly updating the accumulated path costs until a stopping criteria is satisfied.

8. (Previously Presented) A method according to claim 1, comprising selecting additional points based on said computed costs.

9. (Previously Presented) A method according to claim 1, wherein the accumulated path cost of a point is a function of a local cost of the point and an accumulated path cost of at least one neighbor point of the point.

10. (Previously Presented) A method according to claim 1, wherein computing said accumulated path cost comprises solving an Eikonal equation.

11. (Original) A method according to claim 10, wherein solving comprises employing a finite-difference approximation to an Eikonal equation.

12. (Previously Presented) A method according to claim 10 wherein computing said accumulated path cost at a point p is carried out by solving an Eikonal equation ||gradient(U(p))|| = L(p), where U(p) is an accumulated path cost function, L(p) is a local cost function, || || is a norm, and where the condition L(p)>0 holds.

13. (Original) A method according to claim 11 wherein computing said accumulated path cost (u) at a point P, in a three dimensional grid, is carried out by solving the equation:

$$L^2 = \max\left(u - U_{x-1,y,z}, u - U_{x+1,y,z}, 0\right)^2 +$$
$$\max\left(u - U_{x,y-1,z}, u - U_{x,y+1,z}, 0\right)^2 +$$
$$\max\left(u - U_{x,y,z-1}, u - U_{x,y,z+1}, 0\right)^2$$

where L is the local cost and the U's are accumulated path costs for neighbors of P.

14. (Previously Presented) A method according to claim 1, wherein computing said accumulated path cost is carried out using cost calculations suitable for a fast marching method.

15. (Previously Presented) A method according to claim 1, wherein the points are on a regular grid.

16. (Previously Presented) A method according to claim 1, wherein the points are on an irregular grid.

17. (Previously Presented) A method according to claim 1, wherein said computing using a cost function comprises computing the cost function for grid points in a particular order.

18. (Previously Presented) A method according to claim 15, wherein neighbors of a point are one or more adjacent grid points to the point.

19. (Canceled)

20. (Previously Presented) A method according to claim 1, wherein the points are arranged as a graph.

21. (Currently Amended) A method according to claim 1, ~~wherein~~ wherein said points are on a grid, and are located ~~neighbors of a point are one or more grid points~~ at a certain distance or at a certain radius from the point.

22. (Currently Amended) A method according to claim 1, wherein determining a path is carried out by a gradient descent method applied on said points for which an estimated-cost-to-target from a point to the target point is ~~with~~ calculated ~~costs~~.

23. (Currently Amended) A method according to claim 1, wherein said estimated-cost-to-target computation is adjusted by deceasing the computed value for use in determination of the minimal path or minimal path cost~~intentionally underestimated~~.

24. (Currently Amended) A method according to claim 1, wherein said estimated cost to target computation is adjusted by increasing the computed value for use in determination of the minimal path or minimal path cost~~intentionally overestimated~~.

25. (Previously Presented) A method according to claim 1, wherein said estimated cost to target is based on a Euclidian distance to said target.

26. (Previously Presented) A method according to claim 1, wherein a collection data structure is used for obtaining a point with the smallest cost, wherein adding or removing a value from the collection, and reordering the collection has a computational cost of order O(log M) or better, where M is the number of points in the collection.

27. (Original) A method according to claim 26, wherein a heap-type data structure is used for obtaining a point with the smallest cost.

28. (Previously Presented) A method according to claim 1, wherein points are categorized and points of different categories are processed differently.

29. (Previously Presented) A method according claim 1, wherein costs of at least one point are updated after an initial calculation.

30. (Previously Presented) A method according to claim 1, wherein costs of no points are updated after an initial calculation.

31. (Currently Amended) A method according to claim 1, wherein the estimated cost-to-target computation ~~(c)~~ is applied to less ~~often~~ than ~~(b)~~ all the points for which the accumulated path cost has been computed.

32. (Currently Amended) A method according to claim 1, wherein the estimated cost-to-target computation is applied first for the points for which the accumulated path cost is lowest ~~(c) causes delayed evaluation of less promising points~~.

33. (Currently Amended) A method according to claim 32, wherein said estimated cost-to-target computation is applied to 40% or less of the points for which the accumulated path cost has been computed~~delayed evaluation causes a lack of evaluation of at least 40% of points on a grid including said plurality of points~~.